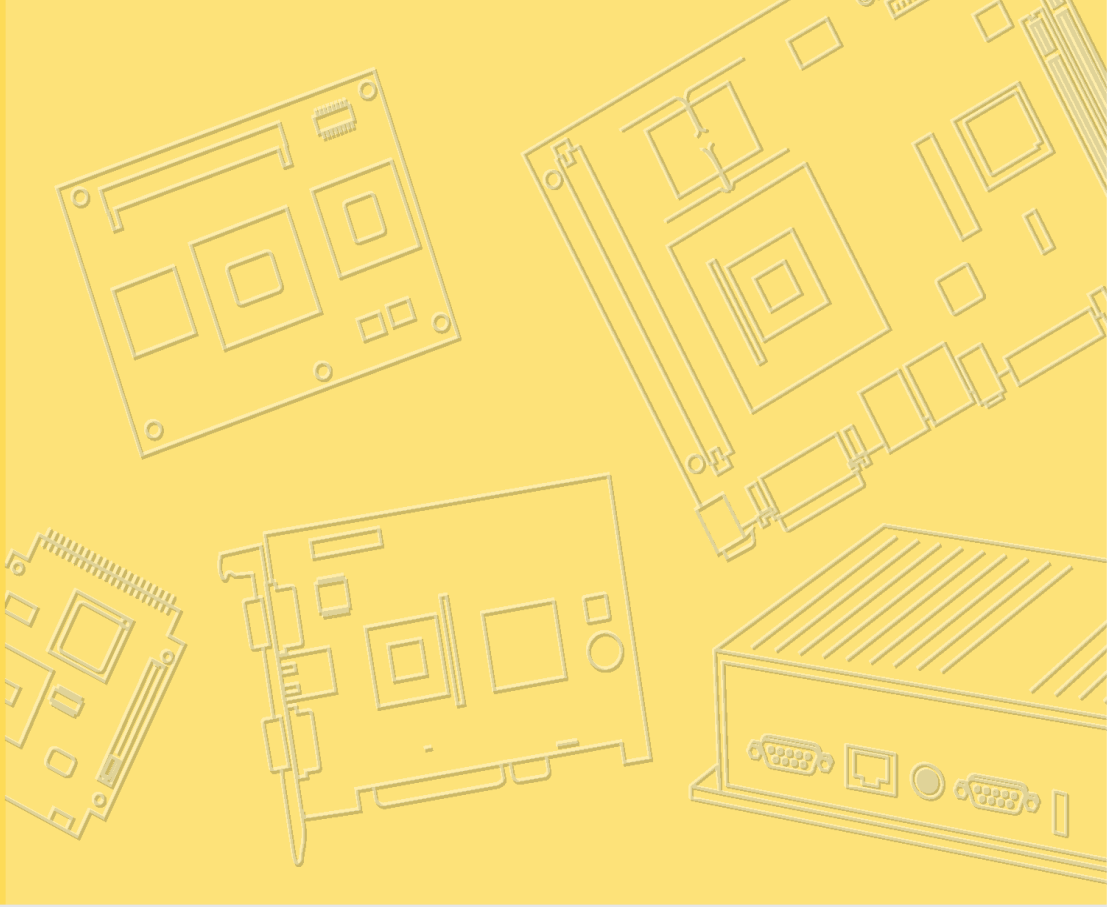

User Manual

TREK-305R

5.7” Display Solution for Vehicle Application

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Acknowledgements

For more information on this and other Advantech products, please visit our websites at:

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http://www.advantech.com/eplatform

For technical support and service, please visit our support website at:

http://www.advantech.com/support

Part No. 2066A35010 Edition 1

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Packing List

Before you begin installing your device, please make sure that the following materials have been shipped:

- TREK-305 device

- Display cable (Advantech P/N: 1700009873) to connect with VITA-350P

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Ordering information

Part Number	Description
TREK-305R-FLA0E	5.7" color TFT LCD with touch screen, 2 Watt speaker, and Power button
VITA-350P-GA0E	MDT with GPS, GPRS, DI/O, RS232, LVDS (TREK is design compatible with VITA)

Declaration of Conformity

根據交通部低功率管理辦法規定：

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer°Øs instructions.*

Additional Information and Assistance

1. Visit the Advantech web site at www.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - A complete description of the problem
   - The exact wording of any error message

Contents

Chapter 1

General Information

This chapter gives background information on the TREK-305.

Sections include:

- **Introduction**
- **Features**
- **Quick Installation Guide**
- **System Dimensions**

1.1 Introduction

Advantech TREK-305R uses a Toshiba 5.7” LCD panel with touch (Toshiba model no: LTA057A344F-12), which is the perfect size to fit into tight spaces for fleet management and dispatching purposes. TREK-305R of 5.7" touch screen panel provides excellent capabilities and features with industrial standard VESA mounting holes, light-weight housing, and convenient mounting accessories. The TREK-305 design is compatible with VITA-350P-GA0E.

Figure 1.1 VITA-350P and TREK-305R total solution

1.2 Features

Display	Type	QVGA TFT LCD (Toshiba LT057A344F)
	Colors	18 bits (256 k)
	Resolution	320 x 240
	Size (disgonal)	5.7” (4:3)
	Pixel Pitch	0.36 (W) x 0.36 (W)
	View Angle (H°, V°)	H: 140°, V: 120°
	Brightness	320 nits by LED backlight
	Touchscreen	4-wire resistive
	Contrast Ratio	500
	Backlight Life Time (hrs)	20000
I/O	LVDS	1 x 26 pin connector
	Audio	2 Watt speaker out
Power	DC Input	3.3 V and 5 V
	LCD power button	Push button
	Power Consumption	1.3 W
Mechanical	Mounting	VESA mount (30 x 38 mm, 75 x 75 mm)
	Material	PC
	Weight	400 (g)
	Dimension W x H x D (mm)	168.55 x 128.05 x 35.6
Enviroment	Operating Temperature	-10 ~ 70°C
	Storage Temperature	-30 ~ 80°C
	Vibration	MIL-STD-810F 514.5C-3
Certification	FCC	FCC 47 CFR part 15B
	IC	ICES-003 issue 4
	CE	EN55022/55024
	E13	ECE-R10 (v.03)
	BSMI	CNS 13438

1.3 Quick Installation Guide

1. Connect 26pin connector to 5.7” panel.

Figure 1.2 - 2 m cable connecting VITA and TREK

2. Connect 36pin connector to VITA-350P.

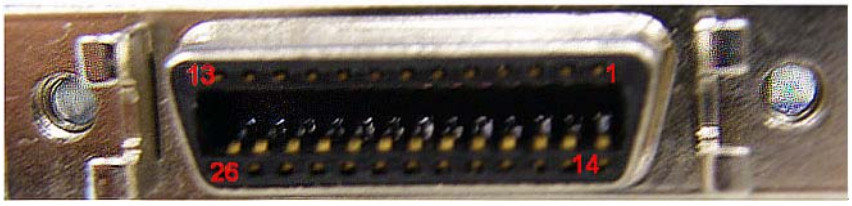
Figure 1.3 Backside of TREK-305R

Power button to control LCD backlight On/Off

When LCD backlight is on, red LED light is on

Figure 1.4 Front side of TREK-305R

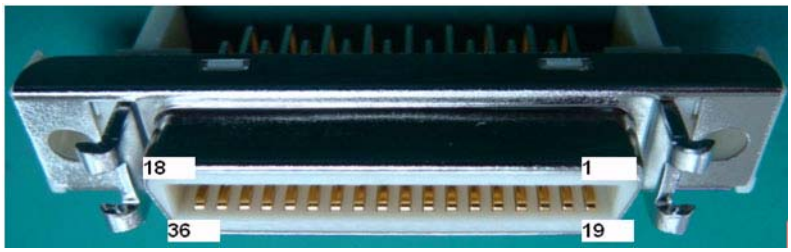
Pin definition (on TREK)



Connector vendor: 3M Touch systems, p/n: 10226-55G3PC

Figure 1.5 26-pin connector

Pin definition (on VITA)



Connector vendor: 3M Touch systems, p/n: 10236-55G3PC

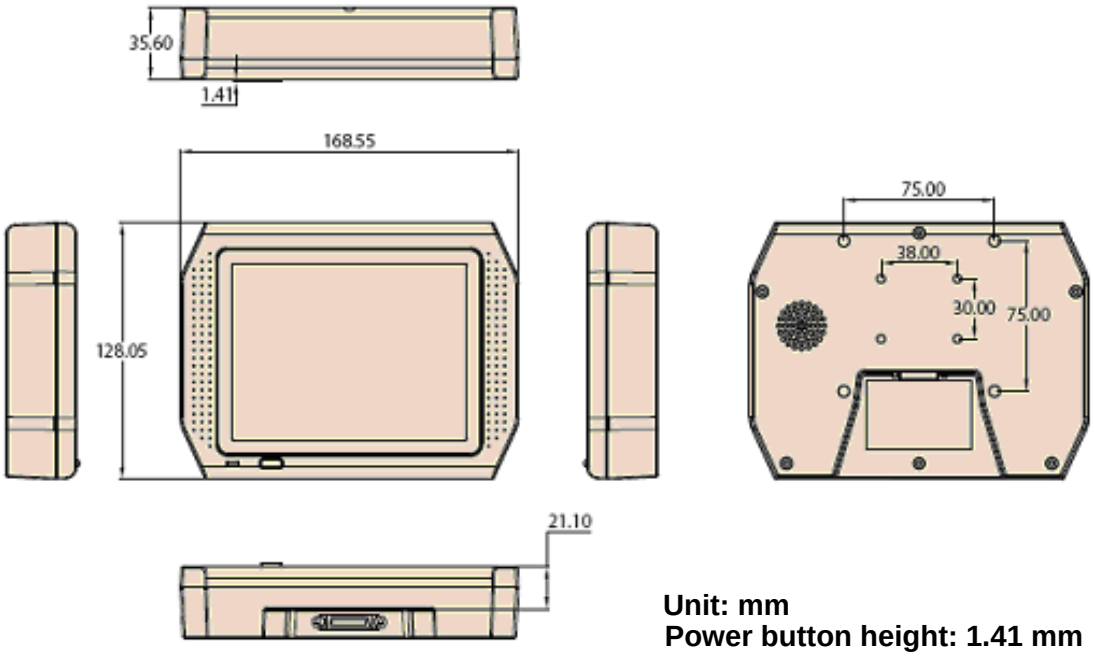
Figure 1.6 36-pin connector

36 pin	CITA-350P Side	26 pin	TREK-305R Side
1	LVDS Data0+	1	LVDS Data0+
2	LVDS Data0-	2	LVDS Data0-
3	LVDS Data1+	3	LVDS Data1+
4	LVDS Data1-	4	LVDS Data1-
5	GND	5	GND
6	T/S signal X+	6	T/S signal X+
7	T/S signal Y+	7	T/S signal Y+
8	T/S signal X-	8	T/S signal X-
9	T/S signal Y-	9	T/S signal Y-
10	GND	10	GND
11	GPIO	11	GPIO
12	DC +5 V	12	DC +5 V
13	DC +5 V	13	DC +5 V
14	LVDS Data2+	14	LVDS Data2+
15	LVDS Data2-	15	LVDS Data2-
16	LVDS Data3+	16	LVDS Data3+
17	LVDS Data3-	17	LVDS Data3-
18	LVDS Clock+	18	LVDS Clock+
19	LVDS Clock-	19	LVDS Clock-
20	GND	20	GND
21	Line in	21	Line in
22	GPIO	22	GPIO
23	GPIO	23	GPIO
24	GPIO	24	GPIO
25	DC +3.3 V	25	DC +3.3 V
26	DC +3.3 V	26	DC +3.3 V
		5 pin	**DI/DO Side**
27	GPIO1	1	GPIO1
28	GPIO2	2	GPIO2
29	GPIO3	3	GPIO3
30	GPIO4	4	GPIO4
31	GND	5	GND
32	X (empty PIN)		
33	X (empty PIN)		
34	X (empty PIN)		
35	X (empty PIN)		
36	X (empty PIN)		

TREK-305R is design compatible with VITA-350P.

Figure 1.7 Front side of VITA-350P

1.4 System Dimensions



Unit: mm
Power button height: 1.41 mm

Figure 1.8 System Dimensions

Appendix A

LCD Specification

A.1 LCD General Specification

Item	Specifications
Display Mode[1)]	TN colors (64 gray scales, 256 k colors)
VIewing Direction	6 o'clock (in direction of maximum contrast)
Driving Method	TFT active matrix
Input Signals	CLK (clock), DE (Data Enable signal) H-sync, V-sync (Synchronization signal) R5, R4, R3, R2, R1, R0 (Red display data) G5, G4, G3, G2, G1, G0 (Green display data) B5, B4, B3, B2, B1, B0 (Blue display data) R/L, U/D (Reverse Scan Control)
Dimensional Outline[2)]	144.0 (W) x 104.6 (H) x 10.0 max. (D) (mm)
Active Area	115.2 (W) x 86.4 (H) (mm)
Viewing Area	115.4 (W) x 86.6 (H) (mm)
Number of Pixels[3)]	320 (W) x 240 (H) (mm)
Pixel Pitch[3]	0.36 (W) x 0.36 (H) (mm)
Pixel Arrangement[3]	RGB vertical stripes
Surface treatment	Anti-glare and hard cost 3H on LCD surface
Backlight	18 LEDs (3 rows) for sidelighting

Note!

1. *k=1024.*
2. *Excluding backlight cables.*
3. *Display area address is as follows.*

A.2 LCD Optical Specification

Item		Symbol	Conditions		Specifications Min.	Typ.	Max.	Unit	Remark
Viewing Angle		θ	CR >=10	ϕ =180°	30	50	-	°	
				ϕ =0°	40	70	-	°	
				ϕ =90°	40	70	-	°	
				ϕ =190°	40	70	-	°	
Contrast Ratio		CR	θ =0°, ϕ =0°		350	500	-	-	
Response Time		t_{ON}	θ =0°, ϕ =0°		-	15	25	ms	
		t_{OFF}			-	25	35	ms	
Luminance		L	θ =0°, ϕ =0° Gray Scale Level=163 (White)		255	320	-	cd/m^2	I_F=12 mA
Luminance Uniformity		LUNF			60	70	-	%	
Chromaticity	Red	X_R	Gray Scale Level: L63 θ =0°, ϕ =0°		0.52	0.59	0.66	-	
		Y_R			0.27	0.34	0.41	-	
	Green	X_G	Ditto		0.29	0.36	0.43	-	
		Y_G			0.48	0.55	0.62	-	
	Blue	X_B	Ditto		0.08	0.15	0.22	-	
		Y_B			0.05	0.12	0.19	-	
	White	X_W	Ditto		0.25	0.32	0.39	-	
		Y_W			0.27	0.34	0.41	-	

Note!

1. *Refer to "11. Measuring Method".*
2. *The above test limit must be applied for initial use. Characteristics will be shifted by long period operation, but it is not irregular phenomena. Theoretically brightness characteristics will be decreased due to color shift.*

Appendix B

Touch Panel Specification

B.1 Enviroment Specification

Chemical Resistance (top surface)	Toluene, Acetone, Methanol, Alcohol, Ethylacetate, Artificial sweat, Petroleum ether

Condition: Tested after leaving the chemical on the surface for 3 minutes being wiped off by cloth.

Judgment: Must be no effect in appearance.

B.2 Mechanical Characteristics

Operating Life	Input (finger)	10,000,000 hits (Note 1)
	Character Input (pen)	100,000 characters (Note 2)

Note!

1. *Testing rod (Figure 1), Load 250 g, Cycle 2hit/sec;*
2. Testing rod (Figure 2), load 250 g, Input size 10 x 10 mm, Input character A to Z / minute.

These (finger and pen) are tested at same point of the panel surface, and all point will become dis-functin after test.

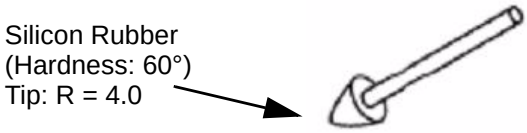


Figure 1 Testing rod 1

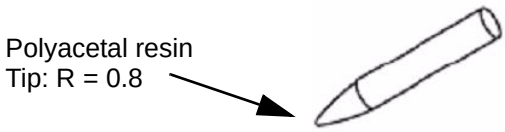


Figure 2 Testing rod 2

B.3 Mechanical Characteristics

Pressing Force	Max 100N (Note 3)
Activation Force	0.05N to 1.0N
Surface Hardness	Over 3H (by JIS pencil hardness) (Note 4)

Note!

3. *Testing with rubber rod. (Ø 16 mm, Hardness 60°), Time: 5 s, Center of LCD surface. If you apply pressure over 100N, white spots and dark spots will be occured.*
4. *Testing pressure is 750 g. If you use 3H hardness pencil with under 750 g pressure, the surface will not be damaged. But using a 4H hard pencil, the surface may be damaged. Please use a 3H pencil or under with under 750 g pressure.*

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